

**REMARKS**

The amendments to the claims add no new matter.

In the non-final Office Action of July 12, 2007, the Examiner rejected claims 11 – 27 under 35 U.S.C §103(a) over *Klein* (US 4,344,846) and *Butterworth* (US 3,958,023). The *Klein* reference is discussed in the specification on page 2, at indicated lines 38 – 39, which states that *Klein* “describes a method for precoat filtration using filter aids based on expanded polystyrene.” The Examiner alleges that “*Butterworth* discloses the use of PVPP admixed with conventional filter aids to treat liquids.”<sup>1</sup> The Examiner erroneously concludes that “[i]t would have been obvious to one skilled in the art to mix (i.e. compound) polystyrene with PVPP ....”<sup>2</sup>

**I. Assuming for the sake of argument that the Examiner’s Official notice statements and summaries of the cited references are accurate, the present invention is not obvious.**

The Examiner’s position does not seem to be internally consistent. In the Official Notice statements, the Examiner has alleged that compounding is a type of mixing. Yet, in the rejection, the Examiner has equated “mixing” and “compounding.” Equating a teaching “to admix” with a teaching “to compound” is not consistent with an allegation that compounding is a type of mixing.

The Examiner has pointed to no apparent reason for a skilled artisan “to compound” polystyrene with PVPP. A teaching “to admix” does not obviate a teaching “to compound,” merely because “compounding” is alleged to be a type of “mixing.” Analogously, a teaching “to move” would not obviate a teaching “to dance” merely because “dancing” was alleged to be a type of “moving.” According to the Examiner’s allegations, the *Butterworth* reference would, at best, disclose a large genus of “mixing.” The Examiner points to no apparent reason to select the alleged subgenus of

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<sup>1</sup> Page 4, lines 3 – 5 of the non-final Office action mailed July 12, 2007 (emphasis added).

<sup>2</sup> Page 4, lines 8 – 9 of the non-final Office action mailed July 12, 2007 (emphasis added).

“compounding.” MPEP § 2144.08 explains that “[s]ome motivation to select the claimed ... subgenus must be taught by the prior art.”<sup>3</sup> The Examiner has not pointed to any such motivation. Indeed, no apparent reason existed to make the proposed modifications.

The Examiner has failed to address all of the claim limitations of independent claim 11, which is directed to a method for filtering and/or stabilizing an aqueous liquid comprising the step of passing a suspension consisting of a discontinuous phase and a continuous phase through a porous filter medium at a constant flow rate. The Examiner has not pointed to an apparent reason for a skilled artisan to arrive at such a method. Thus, claim 11 is non-obvious. Claims 12 – 15 depend from claim 11. “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.”<sup>4</sup>

The Examiner has erroneously stated that a skilled artisan would have made some of the proposed modifications as a matter of routine optimization/manipulation. Independent Claims 11, 16, and 27 require polymer powders comprising from 20 to 95% by weight of at least one thermoplastic polymer and from 80 to 5% by weight of at least one further substance. The Examiner has not pointed to any apparent reason for a skilled artisan to have arrived at these weight ratios. Instead, the Examiner has summarily stated that “[t]he various claimed percentages are parameters that would have been routinely optimized/manipulated by those skilled in the art.”<sup>5</sup> The Examiner’s statement is contrary to well-settled legal precedent, which makes clear that “[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.”<sup>6</sup> At the time the present invention was made, no particular result was recognized in the art with regard to the weight percentages of thermoplastic polymers and further substances in a polymer powder obtained by compounding the thermoplastic polymers and the further substances.

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<sup>3</sup> MPEP § 2144.08, See also: Baird, 16 F.3d at 382-83, 29 USPQ2d at 1552; Bell, 991 F.2d at 784, 26 USPQ2d at 1531 (“Absent anything in the cited prior art suggesting which of the 1036 possible sequences suggested by Rinderknecht corresponds to the IGF gene, the PTO has not met its burden of establishing that the prior art would have suggested the claimed sequences.”).

<sup>4</sup> MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

<sup>5</sup> Page 4, lines 10 – 12 of the non-final Office action mailed July 12, 2007.

<sup>6</sup> MPEP § 2144.05, citing *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (emphasis added).

Thus, the determination of the optimum or workable ranges of these variables cannot properly be characterized as routine experimentation.

The Examiner's proposed combination would not result in the present invention. At best, the proposed combination would result in a mere mixture of polystyrene and PVPP. Clearly compounding was not taught or suggested by the cited references. *Butterworth* merely teaches admixing PVPP and a filter aid. As discussed above, even according to the Examiner's definitions, admixing is not equivalent to compounding. Again, the Examiner points to no apparent reason for a skilled artisan to compound polystyrene and PVPP. More importantly, the claims of the present application are not directed to polymers comprising PVPP and polystyrene. The present claims involve polymers comprising at least one thermoplastic polymer from the group consisting of polyolefins and polyamides, and at least one further substance selected from the group consisting of silicates, carbonates, oxides, silica gel, kieselguhr, diatomaceous earth and crosslinked polyvinyl lactams, and mixtures thereof.

It should be clear that the present rejection is in error, even when the Official notice statements are assumed (for the sake of argument) to be accurate.

## **II. Declarations under 37 C.F.R. §1.132 filed on December 18, 2006.**

In the Declaration executed July 12, 2006,

The sedimentation behavior of the following polymer powders in water was compared:

- A) polystyrene (standard polystyrene PS 158K ground to a mean particle size of  $D(v, 0.5) = 196 \mu\text{m}$ )
- B) polyvinylpyrrolidone (Divergan® F, BASF Aktiengesellschaft, mean particle size of  $D(v, 0.5) = 27 \mu\text{m}$ )
- C) A mixture of polystyrene A and polyvinylpyrrolidone B in a ca. 2:1 weight ratio
- D) A compound (mean particle size of  $D(v, 0.5) = 45 \mu\text{m}$ ) of polystyrene and polyvinylpyrrolidone in a ca. 2:1 weight ratio

The declaration goes on to explain that only compound D provides suitable properties. Thus, contrary to the Examiner's unsupported assertions, it should be clear that a mixture of polymers and a compound of polymers are not equivalent.

### III. Applicants traverse the Examiner's Official Notice Statements.

The Official Notice statements are not accurate. Applicants traverse the Examiner's Official Notice Statements.

"If [Official] notice is taken, the basis for such reasoning must be set forth explicitly. The examiner must provide specific factual findings predicated on sound technical and scientific reasoning to support his or her conclusion of common knowledge."<sup>7</sup> The Examiner has failed to meet this standard. No specific factual findings predicated on sound technical and scientific reasoning have been presented to support Official Notice statements 1 – 4. The Official Notice statements are, therefore, improper and should be withdrawn. Moreover, none of the noticed facts should be deemed to be common knowledge or well-known in the art.

Official notice statement 1) reads, "[p]olystyrene is a well known conventional filtration aid." This statement is an overgeneralization that does not find support in the present record. None of the cited references support such an overgeneralization. For example, the specification on page 2, lines 33 – 36 merely states, "U.S. Pat. No. 4,344,846 describes a method for precoat filtration using filter aids based on expanded polystyrene." U.S. Pat. No. 4,344,846 does not support an overgeneralized assertion that "polystyrene is a filtration aid." Instead, U.S. Pat. No. 4,344,846 describes a method for precoat filtration using filter aids based on expanded polystyrene. Since the overgeneralization that "polystyrene is a filtration aid" has not been supported, it should be clear that the statement that "polystyrene is a well known conventional filtration aid" is unsupported, and inaccurate.

Official notice statement 2) reads, "PVPP is a well known conventional filtration aid and/or stabilization agent." This statement is an overgeneralization that does not find support in the present record. None of the cited references support such an overgeneralization. For example, the specification on page 2, lines 33 – 34 merely states, "EP 351 363 describes highly crosslinked polyvinylpyrrolidones PVPP as stabilizers and filter aids." EP 351 363 does not support an overgeneralized assertion that "PVPP is

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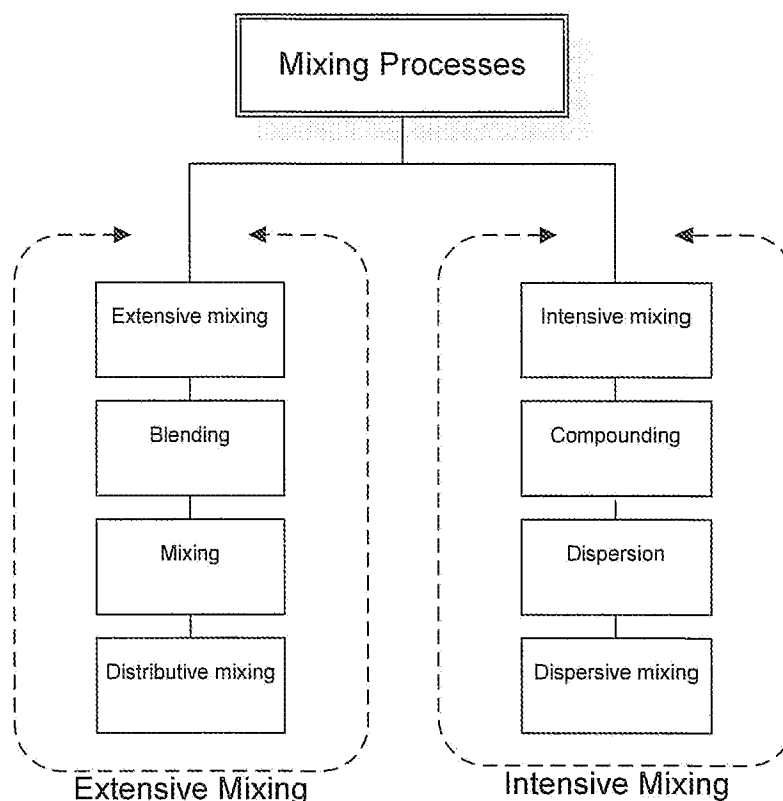
<sup>7</sup> MPEP §2144.03, citing *In re Soli*, 317 F.2d 941, 946, 137 USPQ 797, 801 (CCPA 1963); and *In re Chevenard*, 139 F.2d 711, 713, 60 USPQ 239, 241 (CCPA 1943).

a filtration aid and/or stabilization agent.” This reference refers to highly crosslinked PVPP. Moreover, a single reference, that utilizes highly crosslinked PVPP as stabilizers and filter aids does not support the overgeneralization that “PVPP is a well known conventional filtration aid and/or stabilization agent.”

Official notice statement 3) reads, “[c]ompounding is a well known conventional technique for mixing polymers and/or with other materials. Conventionally known twin screw extruders are often used to compound or mix polymers and/or with other materials.” Official notice statement 3) appears to be based on a misunderstanding and overgeneralization of the terminology used in the present specification at page 6, which explains that,

[t]he thermoplastics used can be prepared by processes known per se. ... To produce the polymer powders, the thermoplastic polymers and at least one further substance are compounded in an extruder. Compounding is generally mixing a polymer with at least one additive. ... In all cases the use of extruders, in particular twin-screw extruders, is preferred.

A person of ordinary skill in the art would not misunderstand and over-generalize this portion of the specification. To assist the Examiner in understanding the terminology employed, Applicants enclose a portion of the publication: Chapman and Hall, Morton-Jones, David H., *Polymer Processing*, chapter 3.3, pages 59 – 60, 1989, New York. This publication explains that “two basic mixing functions” can be identified in the polymer mixing art. The two basic mixing functions are identified as “extensive mixing” and “intensive mixing.” As illustrated in the diagram below, “[e]ach of the two functions, rather confusingly, carries a number of names.” Extensive mixing is also referred to as blending, mixing and distributive mixing. Intensive mixing is also referred to as compounding, dispersion, and dispersive mixing. The following diagram illustrates this nomenclature.



The term, “compounding,” refers to intensive mixing. Sections 3.3.1 and 3.3.2 of the Morton-Jones publication explain the characteristics of extensive mixing and intensive mixing, respectively. Notably, extensive mixing “consists essentially of stirring together the ingredients” and “[t]he result is a mixture of powders; the individual powders remain and can in principle, be separated....” On the other hand, intensive mixing “involves the more intimate dispersion of the additives into the matrix of the polymer.” Intensive mixing “usually requires a physical change in the components [and] ... the polymer to be in the molten or rubbery state during mixing.” On page 60 of the Morton-Jones publication, the resulting granules are characterized as having the same disperse composition after compounding. To further assist the Examiner in understanding the terminology employed by persons of ordinary skill in the art, Applicants also enclose a portion of the publication: Chapman and Hall, Berins, Michael L. (editor), *Plastics Engineering Handbook of the Society of the Plastics Industry*, chapter 22, page 635, 1991, New York, which explains that “[t]he process by which ingredients are intimately melt-mixed together into as nearly a homogeneous mass as is possible is known as

compounding.” In light of a skilled artisan’s understanding of the relevant nomenclature, Official notice statement 3) is in error, and should be withdrawn.

This discussion of the nomenclature used by those of ordinary skill in the art, should also serve to distinguish the claimed invention from the mixture that would be achieved based on the Examiner’s proposed combination of references. Please note that the *Butterworth* reference only involves extensive mixing. No apparent reason existed for a skilled artisan to utilize intensive mixing.

Official notice statement 4) reads, “[p]opcorn polymerization is a well known conventional polymerization method in which the growing polymer chains are crosslinked to one another. The resultant popcorn polymers are generally insoluble and scarcely swellable.” This statement is a misquotation of the present specification, which explains that “highly crosslinked polyvinylpolypyrrolidone .... is customarily obtained by what is termed popcorn polymerization. This is a polymerization method in which the growing polymer chains crosslink with one another. This can take place in the presence or absence of a crosslinker.”<sup>8</sup> Clearly, therefore, the present record does not support the Examiner’s overgeneralization.

The Official Notice statements should be withdrawn, however, in accordance with the standard set forth in the case of *In re Chevenard*, 139 F.2d 711, 713, 60 USPQ 239, 241 (CCPA 1943), Applicants respectfully “demand [that] the examiner ... produce authority” for the Official Notice Statements. According to the case of *In re Zurko*, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001), “[the examiner] must point to some concrete evidence in the record in support of these findings.”

The Examiner’s statement that “[t]he Official Notice statements ... are relied on to the extent that they are needed,” fails to comply with the requirements of MPEP 707.07(d), which explains that the ground of rejection should be fully and clearly stated. Moreover, it is respectfully submitted that instead of applying inaccurate overgeneralizations “to the extent that they are needed,” the Examiner is under an obligation to comply with 37 C.F.R. §1.104(c)(2), which specifies that “the examiner must cite the best references at his or her command. ... The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.” As such,

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<sup>8</sup> Specification, page 5, lines 14 – 21.

the present rejection should be withdrawn.

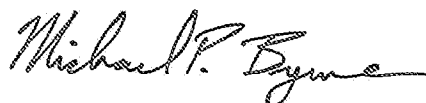
#### IV. Conclusion

This application is in good condition for allowance. In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner is welcome to contact the undersigned by phone to further the discussion.

NOVAK DRUCE + QUIGG, LLP  
1300 Eye St. N.W.  
Suite 1000 West  
Washington, D.C. 20005

Phone: (202) 659-0100  
Fax: (202) 659-0105

Respectfully submitted,  
NOVAK DRUCE + QUIGG, LLP



Michael P. Byrne  
Registration No.: 54,015

Enclosures (2):

- Chapman and Hall, Morton-Jones, David H., *Polymer Processing*, chapter 3.3, pages 59 – 60, 1989, New York.
- Chapman and Hall, Berins, Michael L. (editor), *Plastics Engineering Handbook of the Society of the Plastics Industry*, chapter 22, page 635, 1991, New York.